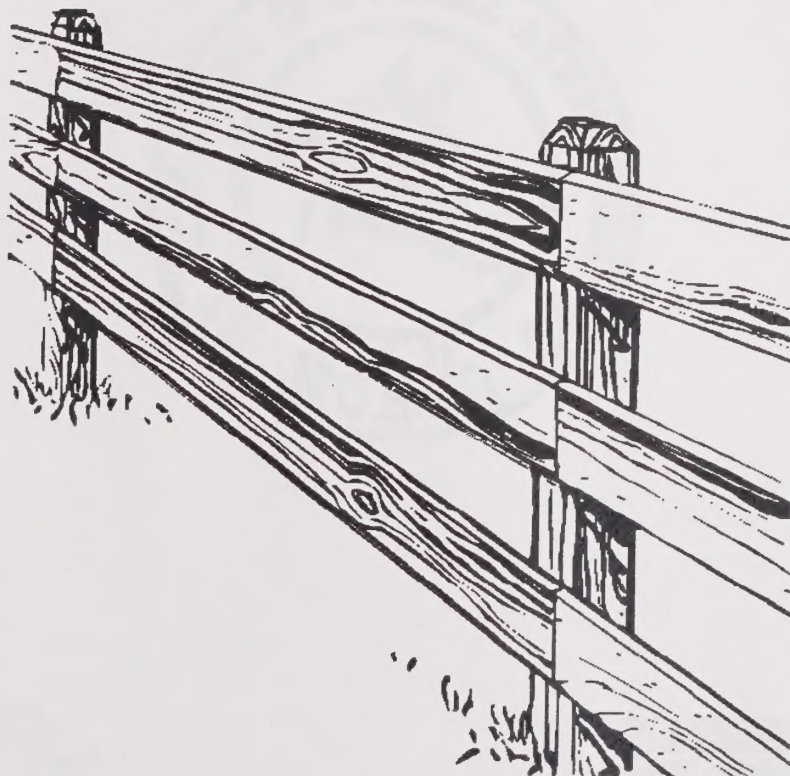


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CITY OF
NORCO
GENERAL PLAN
NOISE ELEMENT

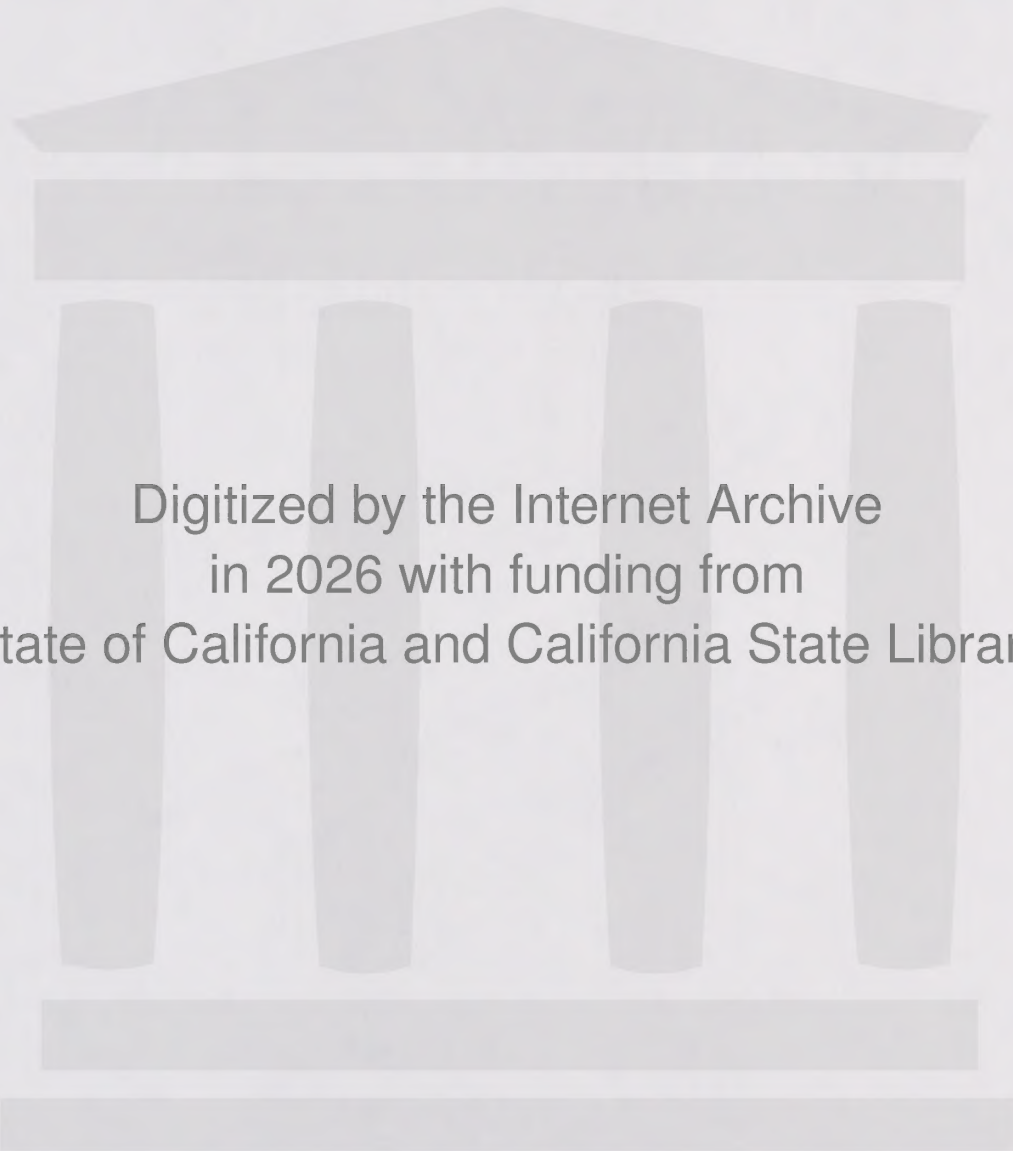


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NORCO

NOISE ELEMENT

ADOPTED BY CITY COUNCIL
RESOLUTION NO. 2003 - 20
March 5, 2003



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1.0 INTRODUCTION TO THE NOISE ELEMENT

The City of Norco was incorporated to preserve a small plot agricultural/animal-keeping/equestrian lifestyle. Primary to this goal is the maintenance of residential neighborhoods that will accommodate and encourage animal keeping and agriculture at a family scale, a concept that dates back to colonial times. The Land Use Element establishes the primary goal of the community, which is the maintenance of that kind of lifestyle. The Noise Element works in conjunction with the Land Use Element in providing the life quality standards that will sustain the community, and support the preservation of the small plot agriculture/animal-keeping/equestrian lifestyle, as a viable primary land use.

1.1 PURPOSE OF THE NOISE ELEMENT

In an urban setting, the City of Norco provides a unique opportunity to maintain this lifestyle that is not readily available elsewhere in the region. The urban setting, however, also presents challenges to maintaining a community that is conducive to the keeping of animals, especially if the use or keeping of animals may be impacted by noise occurrences. The Noise Element provides the guidelines for establishing ordinances and policies that protect sensitive land uses and citizens from other more intensive land uses, and from point sources that produce high levels of noise.

The State has mandated that the General Plan address noise issues so as to protect the community from excessive noise levels. The Element must be consistent with the guidelines established in Section 46050.1 of the State Health and Safety Code, quantifying existing and projected noise levels and the number of people that will potentially be exposed to excessive noise levels. The Noise Element addresses sources of noise that are relevant to the City of Norco, whether the noise source is inside the City, or outside of its borders. The element needs to accomplish the following:

- Measurement of existing and projected noise levels,
- Establishment of noise standards,
- The control and mitigation of major noise sources, and
- Planning for land use patterns that provide protection from noise impacts.

Based on the Noise Element policy statements and standards, the noise ordinance will provide the enforceable codes that will insure, to the best level that can be obtained, that noise nuisances are eliminated or at least controlled to acceptable levels.

1.2 SCOPE AND FORMAT OF ELEMENT

The element is composed of four sections. The first section includes a description of the Element's purpose and background for inclusion in the General Plan. The second section contains the City's goals and policy statements intended to protect the



community from excessive noise levels. The third section is the plan by which the City will control noise and protect the various land uses in the Land Use Element, especially the small plot agriculture/animal-keeping/equestrian lifestyle that defines the community. The fourth section of the Noise Element contains the implementation measures to accomplish the stated goals and policies.

2.0 NOISE ELEMENT GOALS AND POLICIES

2.1 NOISE ISSUES AND PROBLEMS

2.1.1 FREEWAY NOISE

In 1991, CALTRANS completed the "Norco Reach" of the Interstate 15 Freeway thereby completing the only north-south freeway in the Los Angeles metropolitan region that connects Las Vegas and San Diego. The freeway physically divided the City, and created the situation where existing animal-keeping residences were now backing up to the newly created route. On the west side of the freeway, the property was and is zoned for commercial land uses and has been developing as the main commercial corridor in the City along Hamner Avenue. Noise is generally not an impact to commercial uses. The visibility provided by the freeway generally provides a positive benefit for these land uses. Properties on the east side, however, are and will remain in small plot agriculture/animal-keeping/equestrian land uses. The impact of freeway noise on these land uses is an issue.

2.1.2 NOISE IMPACTS ON ANIMAL KEEPING

As a community dedicated to preserving small-plot agriculture/animal-keeping/equestrian lifestyle there is concern about the impacts from noise sources, specifically noise from increasing street traffic, on the long-term health of animals. The concern is not just limited to traffic noise. Industrial and commercial noises, if too close to residential areas, may create impacts that are not safe for the keeping of animals on adjacent residential lots.

2.1.3 NOISE IMPACT FROM ANIMAL KEEPING

While the overall community goal is to establish, protect and promote the agriculture/animal-keeping/equestrian lifestyle that is unique in Southern California, animal keeping, as a land use, can affect adjoining land uses with noise impacts depending on the density and type of animals being kept. Certain animals when kept in large numbers can negatively influence the community because of the noise impacts created by that specific land use.



2.1.4 SPECIAL EVENT NOISE

Because of its small plot agriculture/animal-keeping/equestrian lifestyle, the City wants to maintain streets and neighborhoods that are quiet during late evening and nighttime hours. The minimization of street lighting on many of the residential streets helps to maintain this quiet atmosphere. Special events, whether they be annual events, one-time celebrations, or on-going entertainment, can have disruptive influences to that aesthetic value if the noise impacts are allowed to occur uncontrolled.

2.1.5 INDUSTRIAL/COMMERCIAL NOISE

Depending on the use, there is potential that occupants in commercial and industrial buildings and office parks will create noise levels that are incompatible to the raising and keeping of animals, and that may be incompatible to residential neighborhoods. Generally, the City's commercial and industrial zones are located along the Interstate 15 Freeway-Hamner Avenue corridor. Mostly these zones are in areas that are not near residential areas, but there are locations where industrial/commercial zones back up to residential zones. These are the areas where the greatest potential impact can occur. Many of the potential noise impacts from commercial and industrial uses come from the extra-commercial activities that occur in the off-retail hours, such as the cleaning of parking lots, and the loading and unloading of trucks or temporary storage containers.

2.1.6 LARGE TRUCK/BUS ENGINE NOISE ADJACENT TO RESIDENTIAL

The parking of semi-trucks and other large vehicles is restricted to commercial and industrial zones primarily for aesthetic reasons. This also helps to reduce the noise impacts that can occur, especially adjacent to residential areas when vehicles are started up in early morning hours where they can be left running for many minutes to warm up. The City also allows 75 residential commercial truck-parking permits to be issued per year. This also has the potential to create residential noise impacts, especially during quiet late night or early morning hours.

2.1.7 TRUCK TRAFFIC ON RESIDENTIAL STREETS

The Circulation Element lists the established truck routes in the City (p. 24 of the Circulation Element). Some of the routes have existing residences along them, and there is an on-going concern for the noise impact to these residences. Some of these residences are located in commercial zones and will eventually be replaced by commercial uses. Others of these residences, though, are located in residential zones that are not anticipated to change. Of equal concern is truck traffic on streets that are not designated truck routes, but because they provide easy through routes, have the potential to attract truck traffic. Example streets



include Parkridge Avenue and Second Street from Mountain Avenue west to River Road. The State Vehicle Code requires that trucks be allowed to travel on roads that will provide the most direct line of travel to a given destination from a given origination point.

2.1.8 AIRCRAFT NOISE

The City of Norco is not located within the Airport Land Use Compatibility Zones for any of the airports in the region (Ontario, Riverside, Chino, Corona) but because of the take-off patterns from Ontario International Airport that outgoing flights have to take, there is some overflight noise impact that can occur depending on the air traffic and the weather patterns that affect the air patterns. Norco is also below one of the approach patterns for flights into Los Angeles International Airport, but planes on approach to that airport are still generally high enough in the air that any noise impact is not considered a significant impact.

2.2 EXTERIOR NOISE CONTROL GOAL: CONTROL OUTDOOR NOISE LEVELS TO SAFE AND COMFORTABLE LEVELS THAT PROTECT RESIDENCES AND THE SMALL PLOT AGRICULTURE/ANIMAL- KEEPING/EQUESTRIAN LIFESTYLE IN THE COMMUNITY.

2.2.1 COMMUNITY NOISE CONTROL POLICY: As becomes necessary, the City may consider the adoption of regulations to control noise impacts

Policy 2.2.1a: One option the City may consider is the adoption of a noise ordinance to regulate the impacts of noise on residential neighborhoods and the small plot agriculture/animal-keeping/equestrian lifestyle of the community.

Policy 2.2.1b: General Plan land uses should be located, as can be reasonably accomplished, to minimize the noise impact conflicts between noise sensitive land uses and noise generators.

Policy 2.2.1c: The City should regulate as is feasible the use of motorized vehicles within the City's equestrian-pedestrian zones, and in undeveloped and/or vacant land.

Policy 2.2.1d: The City may consider establishing an inventory of noise generators and noise sensitive land uses in the community and develop mitigation strategies as become necessary.

2.2.2 CONSTRUCTION NOISE CONTROL POLICY: The City should consider adopting and updating as necessary, regulations to minimize noise impacts from construction sites and equipment to residential areas.



Policy 2.2.2a: New development projects near developed and occupied residential areas should be evaluated for possible submittal of a noise reduction plan prior to the issuance of grading permits.

Policy 2.2.2b: All construction equipment should be equipped with noise attenuation features including mufflers and engine shrouds that are at least as effective as original manufacturer equipment.

Policy 2.2.2c: The City should regulate wherever feasible the hours of operation for construction areas including haul routes that may include residential streets and/or sensitive land uses.

- 2.2.3 **OVERFLIGHT NOISE CONTROL POLICY:** The City should work with the Los Angeles Department of Airports, and monitor developments related to the operation of Ontario International Airport on the best ways to protect the City from overflight noise impacts from low-flying approaching and departing jets.
- 2.2.4 **FREEWAY NOISE CONTROL POLICY:** The City should continue to work with CALTRANS for the construction of sound barrier walls along the east side of the freeway adjacent to residential properties.
- 2.2.5 **COMMERCIAL VEHICLE NOISE CONTROL POLICY:** The City may want to consider regulations to control the operation of commercial vehicle engines, including buses, and including operations such as engine start-ups, maintenance, and refrigeration units in or near residential zones.
- 2.2.6 **SPECIAL EVENT NOISE CONTROL POLICY:** Outdoor special events should be located, planned, and timed to minimize potential noise impacts to nearby residential areas.

Policy 2.2.6a: The City should consider, where feasible, measures to control noise at special events that include outdoor entertainment. Acoustical studies, indicating typical noise levels to be anticipated from such events, and the measures to minimize said impacts, may be required by the City prior to issuance of a permit.

- 2.2.7 **COMMERCIAL NOISE CONTROL POLICY:** The City should incorporate as feasible, measures to minimize noise impacts from commercial and industrial zones that are near residential areas.

Policy 2.2.7a: The City should monitor existing excessive noise generators, and where feasible and practical, encourage the installation of additional buffering and noise reduction mechanisms when such operations are located near developed and occupied residential districts.



Policy 2.2.7b: The City should encourage measures to minimize noise impacts from loading/unloading activities and stock storage containers in commercial and industrial zones that are near developed and occupied residential districts.

2.2.8 ROADWAY NOISE CONTROL/MITIGATION POLICY: Incorporate, where feasible and practical, measures to control and or mitigate noise impacts to noise sensitive land uses that are associated with new road development in the City, especially for secondary and arterial roads. Where excessive impact to residential areas already occur from existing roadways, the City may want to consider future measures and the appropriate funding mechanisms, where feasible, to reduce said impacts.

2.3 INTERIOR NOISE ATTENUATION GOAL - CONTROL OF INTERIOR RESIDENTIAL NOISE LEVELS TO COMFORTABLE LEVELS.

2.3.1 INTERIOR NOISE ATTENUATION POLICY: The City should adopt and implement construction standards to reduce interior residential noise levels on new residential development from outside sources to 45 dB(A) or lower.

2.3.2 NOISE-IMPACTED AREAS POLICY: New residential development in areas that already are impacted by noise levels 65 dB(A) or greater should be required to incorporate, as feasible and practical, additional noise attenuation measures to effectuate an interior noise level of 45 dB(A) or lower using such things as double glazing of exposed windows, and the requirement for air conditioning to minimize the need to keep windows open. Exterior noise levels shall be mitigated as much as possible using landscaping and site grading to reduce noise impacts.

2.3.2a: Acoustical studies should be required for all new residential development in noise impacted areas.

2.4 ANIMAL-KEEPING NOISE CONTROL GOAL- In instances where it becomes necessary, the City should implement, as feasible, measures to control noise impacts in residential zones from overly intensive animal-keeping activities from certain types of animals (birds and dogs as examples.)

2.4.1 ANIMAL UNIT DENSITY CONTROL POLICY: Where it has been determined by the City that certain species of animals can be a noise impact in residential areas when present in excessive numbers, the City may want to consider feasible measures to control the noise impacts from these particular species.



3.0 NOISE CONTROL PLAN

3.1 NOISE FUNDAMENTALS

Noise is unwanted sound; and physical health, social cohesion, property value and economic productivity are all potentially affected when noise levels are excessive. The negative impact from noise can range from moderately annoying to discomfort to health threatening, and the intensity of the impact can vary from one individual to another. While most environmental noise is not at hearing damage levels, there can be an impact to the perceived quality of life.

Noise levels generally increase as urbanization increases. Most of the increase in noise comes from the increased amount of traffic on community streets and on freeways. The City of Norco considers itself a rural community, but Western Riverside County is rapidly urbanizing on all sides of the City. The demand for commercial development and the desire of the City to secure financial stability for the future with a strong commercial tax base, and the need for regional transportation access brings some of that urban traffic into the City. As with other urbanizing areas, the largest source of noise increase in the community is the increase in traffic.

Unlike water and air impacts, the issue of noise impacts has not received the same level of study and research to determine what the negative impacts are to humans and/or to the environment. This is primarily because humans as well as animals tend to adapt to noise levels that are not at harmful levels, and since the impacts are not seen, the incremental increases often go unnoticed over the span of time. Generally when noise does become an issue, it is only after a significant generator has located in the community, or an existing source has grown in intensity over a time span. In both cases adequate planning can help prevent some incompatible situations from occurring.

3.1.1 METHODS FOR NOISE LEVEL RATING

Sound is the energy that is transmitted by pressure waves created when air is compressed. The rate of oscillation determines the different sounds that we hear. The parameters that define oscillation are the distances between peaks and troughs, the rate of propagation, and the pressure level. When the parameters fall below or above certain levels, the sound created goes outside of normal human perception ranges.

There are various methods for measuring sound, however, pressure level is the most common descriptor used to determine the "loudness" of a sound. The decibel (dB) scale is used to quantify the pressure, or intensity of sound. It is a logarithmic scale, similar to the Richter Scale for earthquakes, where sound levels can increase a million fold within the normal range of human hearing. Since the human ear is not equally sensitive to all sound frequencies within the auditory spectrum, the human response is factored into the decibel scale by



weighting sounds within the maximum range of human sensitivity more heavily. This is known as the A-weighted decibel (dBA) scale.

Environmental noise levels fluctuate over time within a 24-hour period and different descriptors are used to account for the variability. Time variations in noise exposure are typically expressed in a steady-state noise level that represents the entire energy content of a sound wave over a given time period (called Leq). Since noise occurrences seem greater during quieter times of the day, noise levels are weighted to reflect duration, frequency, and time of occurrence. State law requires that noise levels be weighted with an artificial dB increment for evening and nighttime hours.

Examples of how true noise levels are weighted to reflect different background situations are as follows. A noise impact that occurs only once briefly is not perceived to be the nuisance that it would be if it were occurring all day long, even if the noise thresholds were acoustically the same. Additionally, a noise is perceived to be more of a nuisance at night when background environmental sound levels are less than they are during the daytime. The acoustical scales that “weight” noise levels are as follows:

Energy equivalent sound levels (Leq): the constant level averaged over a given time period that transmits the same acoustical energy as the actual sound as it occurred in the time that it occurred.

Day-Night average sound levels (Ldn): based on the Leq, this scale assigns a 10 dB(A) “penalty” for noise that occurs in quieter hours to take into consideration the lower ambient noise levels.

Community Noise Equivalent Level (CNEL): a metric scale that is primarily the same as the Ldn factor, but with a greater weighting factor applied that has replaced the Ldn as the most common weighting scale used to calculate noise impacts.

The CNEL value at any given location will exceed the Ldn value, and likewise the Ldn value will exceed the Leq value because of the different weighting factors that are involved. Because the CNEL and the Ldn values usually vary only within 1.0 dB(A) of each other, they are many times interchangeable, and it is safe to assume that a scale based on Ldn values, reflects similar values on a CNEL scale.

The application of the CNEL scale on rating noise impacts in the community is based on a combination of existing ambient noise levels and the duration of noise impacts being considered. Once a community noise level standard has been established (60 dB[A] CNEL, for example) the amount of noise that can be added cannot create a CNEL level greater than that, when figured with existing



conditions. This method of determining the impact of noise allows agencies the opportunity to control the time and duration of significant noise generators.

If the existing ambient CNEL level is 55 dB(A) and the standard is 60, new noise could not exceed a 5 dB(A) CNEL increase. In this example, a noise impact of 65 dB(A) for six hours during the day, or 1½ hours during the evening, or ½ hour during the night, would equal an increase of 5 dB(A) CNEL for an ambient noise level of 60 dB(A). If an impact of 75 dB(A) is introduced, it could only operate for ½ hour during the day, 10 minutes during the evening, or 3 minutes during the night without additional attenuation measures to reduce the impact.

An additional noise measurement scale is the Single Event Noise Exposure Level (SENEL). This measurement is also given in decibels and is used to determine the impact of a single event. To use the SENEL measurement effectively, the City would need to adopt a Noise Ordinance that establishes a threshold noise limit for special events.

Single Event Noise Exposure Level (SENEL): the noise exposure level of a single event measured in the time between the beginning and end of the event when the noise level exceeds an established threshold.

3.1.2 HUMAN REACTION TO NOISE LEVELS

Table 3.1 lists recommended noise levels at the corresponding reaction points for humans. These are useful when considering noise control regulations. Human response to noise is subjective and can vary from person to person for the same incident.

TABLE 3.1
HUMAN REACTION TO NOISE LEVELS

NOISE LEVEL	EFFECT
75 dB(A) (avg., 8 hours)	Negligible risk of hearing impairment
70 dB(A) (avg., 24 hours)	Negligible risk of hearing impairment
60 dB(A) (continual)	Difficult speech intelligibility
55 dB(A) (continual)	Fairly good speech intelligibility
45 dB(A) (continual)	Some interference in speech intelligibility
45 dB(A) (single event)	No sleep disturbance
45 dB(A) (continual) (outside bedroom)	No sleep disturbance
30 dB(A) (continual) (inside bedroom)	No sleep disturbance
30 dB(A) (continual)	Excellent speech intelligibility

The adverse effects of noise can impact concentration, communication, and sleep. In the dB(A) scale, human audibility begins at 1.0 dB(A). At 140 dB(A)



the noise level approaches a threshold that can cause physical pain. Every increase of 10 dB(A) represents ten times the previous noise level and is perceived to be twice as loud by the human ear. The World Health Organization has reviewed a large number of reports and has recommended maximum noise levels for different environmental situations. Table 3.2 shows typical noise levels for familiar environmental noises measured in dB(A).

3.1.3 HARMFUL EFFECTS OF NOISE

Noise can cause both physical and psychological effects in humans, be they temporary or permanent. Temporary physical reactions to sudden noise occurrences besides the visible startle reflex can include the constriction of peripheral blood vessels, secretion of saliva and gastric juices, changes in heart rates, altered breathing patterns, visual and equilibrium impacts, and changes in the composition of blood and urine. Chronic reoccurrence of these can aggravate headaches, fatigue, heart disease, and circulatory and equilibrium disorders. Psychological impacts can range from immediate irritability and distraction to long term anger, depression, and retarded learning and accuracy.

The most common effects that usually are not harmful, but can be at extreme levels, are the disruption of speech and sleep. Exhibit 3.1 shows the range of communication that can occur at different noise levels and different distances. Speech interference begins at 40-45 decibels and becomes severe at about 60.

3.1.4 COMMUNITY REACTION TO NOISE LEVELS

As indicated, human response to noise can vary from one person to another. According to noise studies done for Caltrans to develop standards in their Noise Manual, approximately 10% of the population has such a low tolerance for noise, that any noise not created by them becomes a nuisance. At the other end of the spectrum are individuals who will not complain even under extreme noise conditions. Therefore, a noise element and the corresponding implementing ordinances, needs to develop standards and thresholds that apply generally to the biggest group of citizens in the middle of the spectrum.

Based on these same studies, it was found that for most of the population, an increase or decrease of 1.0 dB(A) is not perceptible except in a carefully controlled lab environment. An increase of 3.0 dB(A) is barely noticeable outside of the lab under normal environmental conditions; and usually it is necessary for there to be an increase of at least 5.0 dB(A) to create an impact enough that will generate complaints from the community.



TABLE 3.2
FAMILIAR NOISE LEVELS (dBA)

Human Ear Sensibility	dB(A)	Noise Source
	145	
Physically Painful	140	Sonic Boom
Extremely Loud	135	
	130	
	125	Jet Takeoff at 200'
Discomforting	120	Oxygen Torch
	115	Discotheque
	110	Motorcycle at 15' (unmuffled)
	105	Power Mower at 3'
Very Loud	100	Newspaper Press
	95	Freight Train at 50'
	90	Food Blender
	85	Electric Mixer, Alarm Clock
	80	Heavy Truck at 50'
	75	Busy Street Traffic at 50'
	70	Average Traffic at 100'
		Vacuum cleaner
Loud	65	Electric Typewriter at 10'
	60	Dishwasher at 10'
		Air Conditioning Unit at 15'
	55	Normal Conversation at 5'
	50	Typical Daytime Suburban Noise
	45	Refrigerator at 10'
	40	Bird Calls
	35	Library
	30	
Quiet	25	
	20	Motion Picture Studio
	15	
	10	Leaves Rustling
	5	
Threshold of Hearing	0	



EXHIBIT 3.1
AFFECTS OF NOISE ON COMMUNICATION

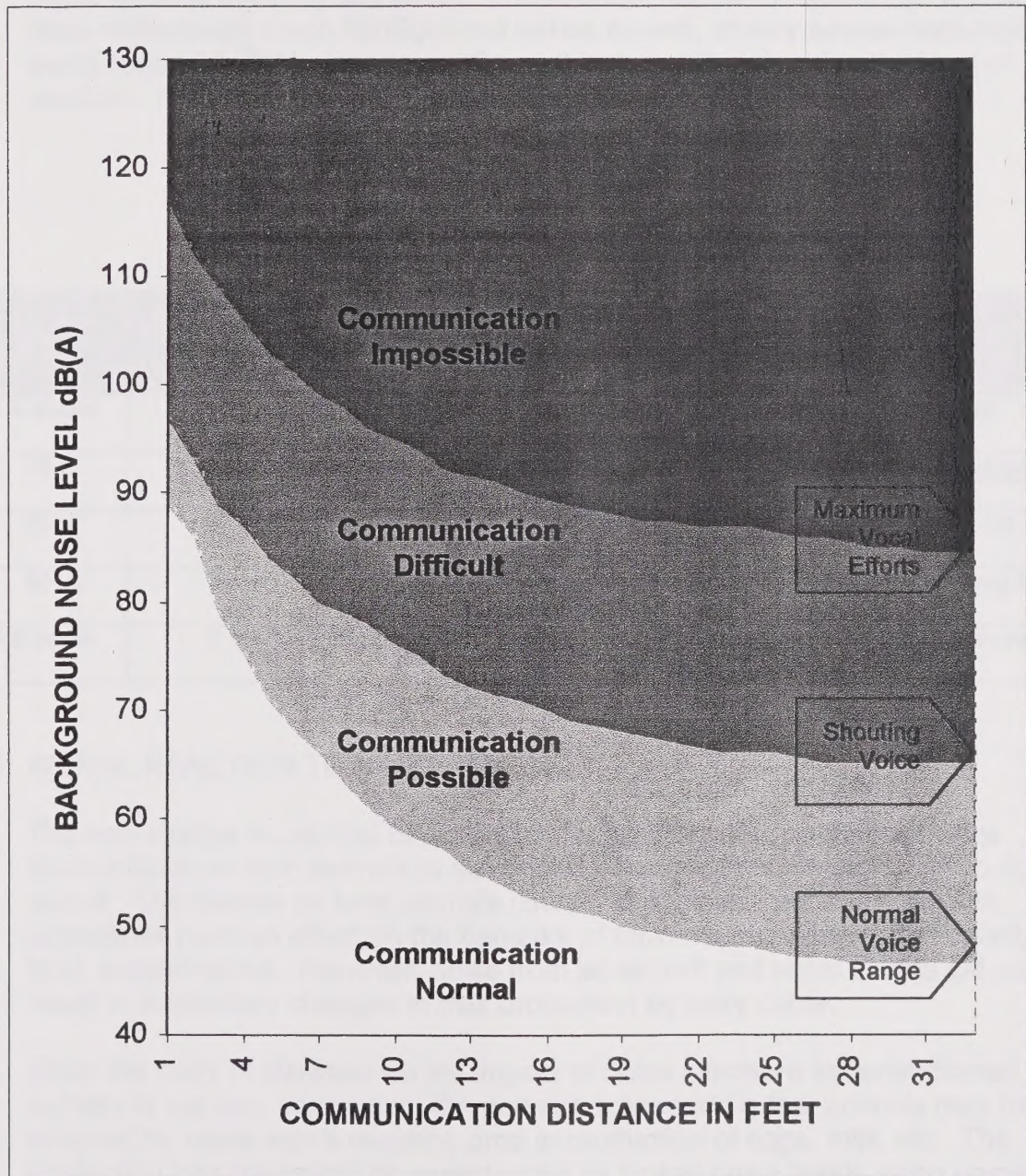


Table 3.3 shows the anticipated community response to noise levels as determined by the U.S. Department of Transportation in their "Guidelines for Considering Noise in Land Use Planning and Control." In their studies the average neighborhood reaction was determined be slight to moderate for noise levels that are 60dB(A) and lower. The average reaction increases to significant once noise levels reach 65dB(A) and will be severe, or very severe once noise levels reach 70dB(A) and above. Several factors can determine the level of reaction. Probably the most significant factor is the time of day.

TABLE 3.3
EFFECTS OF NOISE ON COMMUNITY
(RESIDENTIAL LAND USE)

NOISE LEVEL dB(A)	PERCENT HIGHLY ANNOYED	HEARING LOSS	COMMUNITY PERCEPTION OF IMPACTED NEIGHBORHOOD
75 & above	37	May begin to occur	Noise is most likely to be the most <u>important</u> adverse issue of the neighborhood.
70	25	Not likely to occur	Noise will be <u>one of the most important adverse</u> issues facing the neighborhood.
65	15	Will not occur	Noise is one of the <u>important issues</u> facing the neighborhood.
60	9	Will not occur	The noise impact <u>may be considered adverse</u> to the neighborhood.
55 & below	4	Will not occur	Noise is not considered <u>more important</u> than various other environmental issues.

3.1.5 ANIMAL REACTION TO NOISE LEVELS

The only studies found that measured the impact of noise on animals were studies done on farm animals to determine if there was an impact to agricultural output. The studies on farm animals (Bond, 1970) indicated that noise can sometimes have an effect on the behavior of farm-raised animals, particularly loud, sudden noise. However, noise from jet aircraft and sonic booms did not result in evidentiary changes in milk production by dairy cattle.

While the body of literature on the impact of noise exposure to domesticated animals is not very conclusive, the general consensus is that animals may be stressed by noise with a resulting drop in production of eggs, milk, etc. The production loss that might be experienced by typical noise levels along some Norco roads, however, would only be a few percent.

Swine exposed to reproduced aircraft noise (usual intensities ranged from 100 to 120 dB, with some intensities as high as 135 dB) resulted in no evident changes in rate of growth, food intake, efficiency of feed utilization, or reproduction. In another study (Kryter, 1972) it was noted that sudden, unexpected bursts of impulsive or steady-state noises will cause physical responses in animals, but



that with continued exposure, animals will more or less completely adapt. The noise levels used in these studies were in the 100 dB range and greater.

Noise stress upon horses is more related to single events than to total noise exposure. Horses tend to become adequately adapted to moderate steady-state noise, but can experience a “fight or flight” reaction to loud single event noises like horns, backfires, alarms, etc. Noise exposure levels at most streets are not so high as to create obvious noise concerns, however with increases in traffic the potential for startle events increases also.

3.2 EXISTING SETTING

3.2.1 SIGNIFICANT NOISE GENERATORS IN THE COMMUNITY

To have an effective noise control program, the City needs to identify significant sources of noise in the community. Because most of the community is small plot agriculture/animal-keeping/equestrian in nature, most significant noise is a result of street and freeway traffic. Commercial and industrial land uses have the potential to create noise impacts that could be disruptive to the City’s lifestyle, but those land uses, especially industrial, are mostly in areas where any significant noise impacts would dissipate over distance, and thereby not be an impact to residential areas.

3.2.1a Commercial and Industrial Land Uses. There are two significant areas where industrial zoning adjoins existing residential development. The first of these is the commercial-industrial node centered around the intersection of Hamner Avenue and Commerce Street. Existing residential properties along Mountain Avenue back up to industrial land uses along Industrial Avenue. In most cases the residence is located a substantial distance from any of those existing uses, and the City is not aware of any uses on that street that produce significant levels of noise. There is no history of noise complaints from that area. All of the properties along Mountain Avenue are within the Gateway Specific Plan industrial area and will someday be industrial land uses, eliminating any potential future conflict.

The other major area where industrial zoning adjoins residential land uses is the Wyle Labs property east of Hillside Avenue. While there are activities on the Wyle Labs property that could potentially produce significant impacts to nearby residences, the topographical setting attenuates impacts to levels that are not significant. The facility is located in a natural valley that physically separates it by ridges from residences to the north and south; and the primary activities on site are located a substantial distance from residential areas to the west and east that are downslope and upslope respectively from the facility. Any noise impacts that could be created are attenuated over the long distance to residences. The City is not aware of any noise complaints from activities at Wyle Labs. In recent years the number and magnitude of tests at this facility have been greatly reduced and



at the writing of this document, the property has been sold, and the facility is winding down for permanent closure.

Most of the noise complaints that the City receives deal with noise from temporary activities like parties and bands in residential areas. The only animal-related noise for which the Sheriff's Department receives calls is from dog barking. A noise survey was completed in 2001 to identify potential noise concerns and issues in the community, and to identify any additional significant noise generators that might exist. Exhibit 3.2 shows the locations where noise measurements were taken.

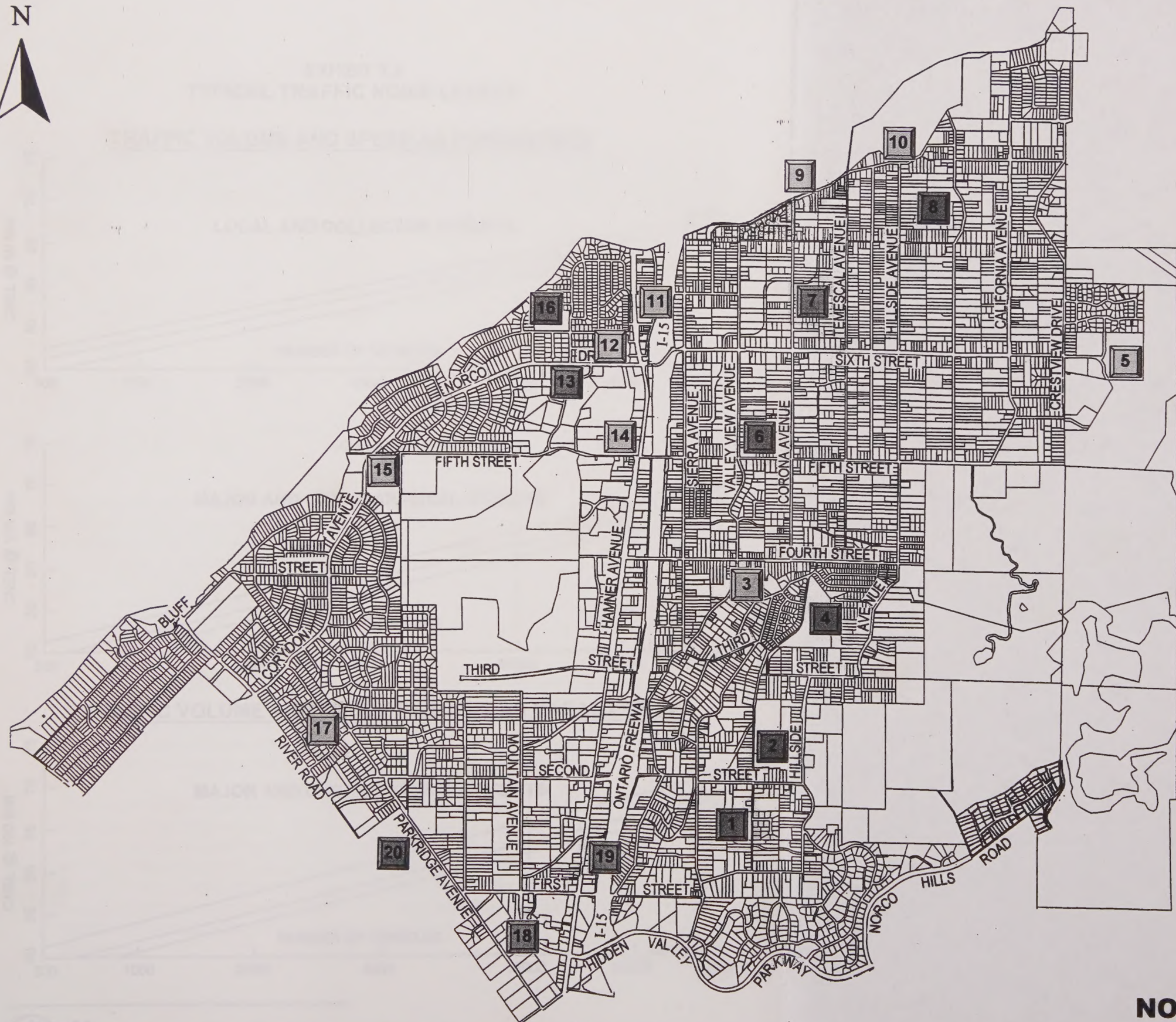
3.2.1b Street Traffic Noise Impacts. Two sets of noise measurements were taken to determine the level of noise that is created by street traffic. The survey was not limited to traffic noise only; but as indicated in Section 3.2.1a, most of the continual noise that is experienced in neighborhoods comes from traffic. Long term measurements were taken at five different intersections on the east side of the City where a semi-grid road pattern, with long spans between stops, does not discourage through traffic the same as do later subdivision designs that are typical on the west side. Table 3.4 shows the results of the long-term noise measurements.

The long-term measurements suggest that close to City roadways, the noise standard for noise-sensitive land uses (65 dB[A]) is generally exceeded with noise levels of 65–69 dB CNEL. This will likely be the case on most streets excepting the most lightly traveled streets in the community. Most of the maximum noise levels were associated with either the morning or afternoon commuter hours. Because of the weighting that occurs on the CNEL scale for late night hours, the 24-hour CNEL and peak hour levels are very similar.

Noise levels adjacent to roadways are dependent on a number of factors including the volume of traffic, the number of trucks in the mix of traffic, and the speed of the vehicles (Exhibit 3.3). From a mathematical formula that relates traffic volume to noise impact it has been determined that a 26% increase in volume translates into a 1.0 dB(A) increase in noise level and a doubling of traffic volume increases the adjacent noise level by 3.0 dB(A). A change in vehicle speed has an even greater impact on noise levels as is shown in Exhibit 3.3.

A major arterial that carries 10,000 ADT at a speed limit of 50 mph would create a noise impact of 64 dB(A) CNEL at 100 feet from the centerline. By lowering the speed limit to 45 mph, the sound level impact is reduced to 62.5 CNEL at 100 feet, and a speed limit of 40 mph creates a noise impact of 61 CNEL. Exhibit 3.2 also illustrates the impact of truck mix within the overall traffic pattern. The bottom scale of Exhibit 3.3 assumes an average speed of 40 mph on a major or urban arterial. At that speed with a traffic volume of 10,000 and a truck mix of 10% of the total, the CNEL would be 66 CNEL. If the truck mix is 5%, the CNEL lowers to 63.5 and at a 2.5% truck mix the level is 61.5.





LEGEND

PARKS

- 3. Parmentor Park
- 5. Ingalls Park
- 9. Rivertrails Park (Corona Avenue)
- 10. Rivertrails Park (Hillside Avenue)
- 11. Clark Field
- 12. Community Center
- 14. Neil Snipes Park
- 15. Makin-Shearer Park
- 17. Kips Korner Park

CHURCHES

- 7. 4191 Corona Avenue
- 13. 2000 Norco Drive
- 18. 1001 Parkridge Avenue
- 19. 1609 Hamner Avenue

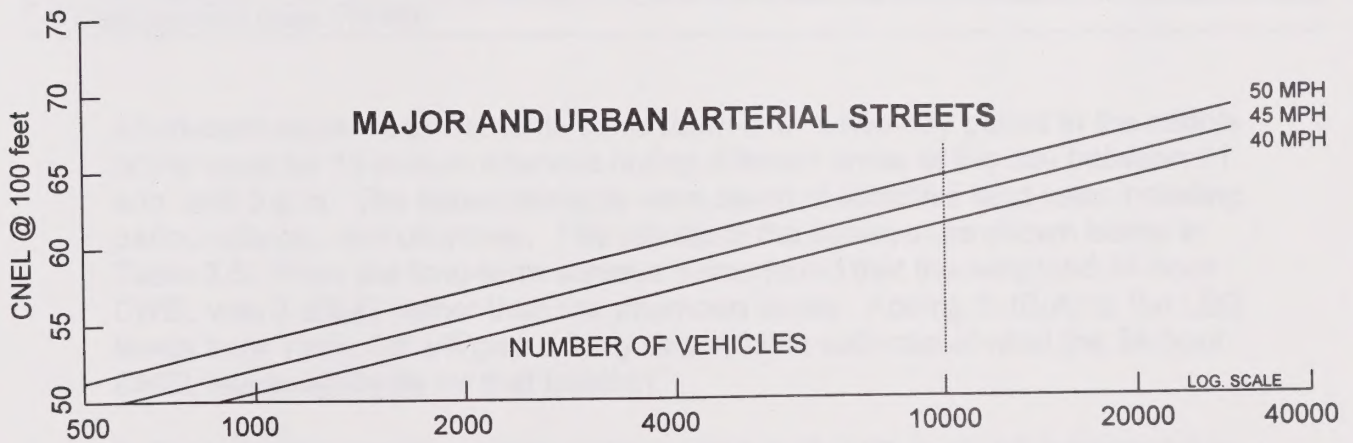
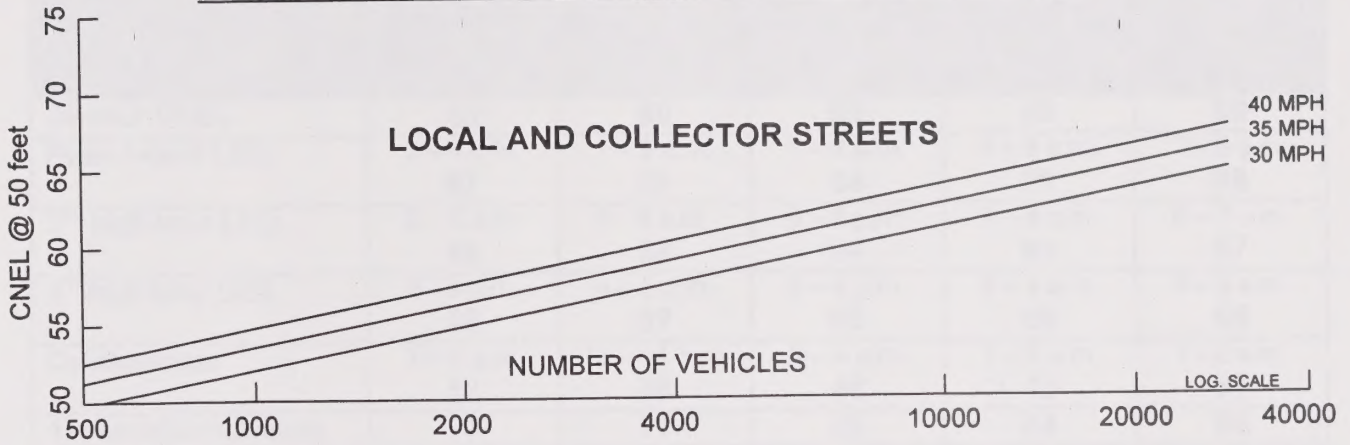
SCHOOLS

- 1. Norco Elementary School
- 2. Norco High School
- 4. Norco Intermediate School
- 6. Sierra Vista Elementary School
- 8. Riverview Elementary School
- 16. Highland Elementary School
- 20. Auburndale Intermediate School

EXHIBIT 3.2
NOISE MONITORING LOCATIONS

EXHIBIT 3.3 TYPICAL TRAFFIC NOISE LEVELS

TRAFFIC VOLUME AND SPEED AS PARAMETERS



TRAFFIC VOLUME AND TRUCK PERCENT AS PARAMETERS

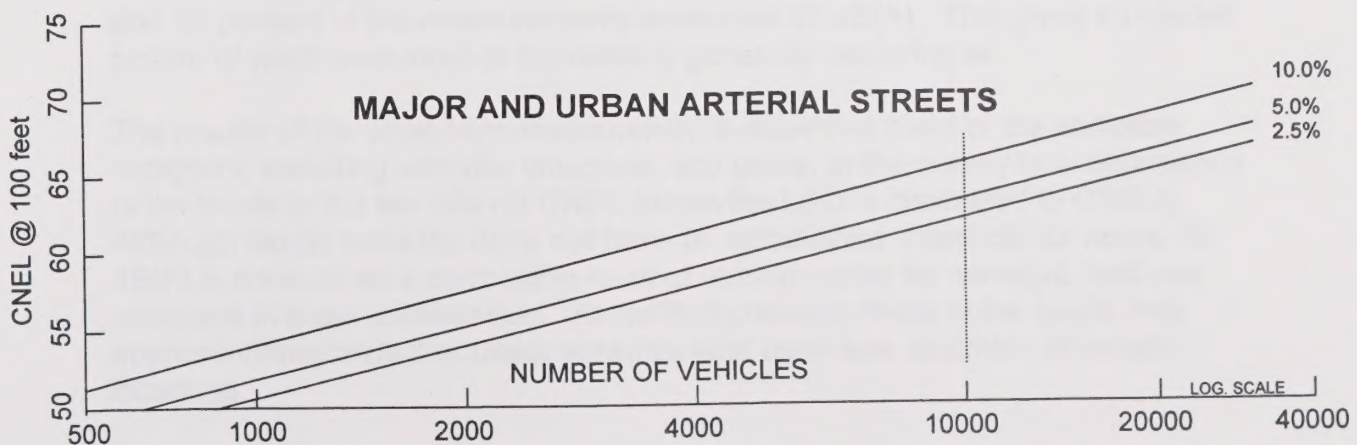


TABLE 3.4
LONG-TERM NOISE MONITORING RESULTS (dBA)

PARAMETER	LOCATIONS				
	① First & Valley View	① First & Corona	② Second & Hillside	② California & Proctor	② Fifth & Sierra
24-hour CNEL	69	60	65	68	69
Peak 1-hour LEQ	3 – 4 p.m. 67	7 – 8 a.m. 59	7 – 8 a.m. 64	4 – 5 p.m. 71	7 – 8 a.m. 68
2 nd high hour LEQ	5 – 6 a.m. 66	8 – 9 a.m. 58	5 – 6 p.m. 64	7 – 8 a.m. 69	6 – 7 a.m. 67
3 rd high hour LEQ	4 – 5 p.m. 66	4 – 5 p.m. 57	3 – 4 p.m. 63	8 – 9 a.m. 69	8 – 9 a.m. 66
Quietest hour	1 – 2 a.m. 57	10 – 11 p.m. 46	3 – 4 a.m. 46	1 – 2 a.m. 45	1 – 2 a.m. 57
1 – second maximum	77	77	85	84	85
1 – second minimum	47	33	39	30	48
① Measurements taken 4/17/01 in conjunction with Corona/Valley View Extension EIR					
② Measurements taken 11/26/01					

Short-term noise measurements were taken over a two-day period in the middle of the week for 15-minute intervals during different times of the day between 11 a.m. and 5 p.m. The measurements were taken at sensitive land uses including parks, schools, and churches. The results of the surveys are shown below in Table 3.5. From the long-term surveys it was found that the weighted 24-hour CNEL was 3 dB(A) higher than the afternoon levels. Adding 3 dB(A) to the LEQ levels from Table 3.5 will give a fairly dependable estimate of what the 24-hour CNEL levels would be for that location.

In Table 3.5 the numbers below columns L10, L33, L50, and L90 represent the percentage of readings from that site that exceed the noise level in the column. For example, 10 percent of the measurements at Site "A" exceeded 62 dB(A), and 33 percent of the measurements exceeded 57 dB(A). This gives a broader picture of what level most of the noise is generally occurring at.

The results of the short-term measurements show that most of the sensitive receptors, including schools, churches, and parks, in the survey now experience noise levels in the low 60s dB CNEL (when the LEQ is converted to CNEL). Although Norco currently does not have an established threshold for noise, 65 dB(A) is considered a compatible level of outdoor noise for sensitive land use receptors in most communities. As traffic increases, these noise levels may approach thresholds that make sensitive land uses less desirable in certain locations.



TABLE 3.5
SHORT TERM NOISE MONITORING RESULTS (dB[A])
 SITE LOCATIONS REFER TO EXHIBIT 3.3

SITE	LEQ	Lmax	Lmin	L10	L33	L50	L90
1	58.7	74	49	62	57	55	52
2	60.9	74	48	64	60	58	53
3	56.1	74	46	58	54	52	48
4	61.9	76	51	64	58	56	52
5	54.9	63	46	58	55	53	50
6	63.1	79	48	66	60	58	51
7	55.5	67	46	60	54	52	49
8	63.1	81	48	66	60	56	52
9	60.5	64	57	61	60	60	59
10	55	66	48	58	54	53	50
11	65.5	80	48	69	65	62	52
12	59.9	72	50	62	59	58	54
13	59.8	76	46	63	56	54	49
14	60.8	70	54	64	61	60	56
15	54.3	66	45	57	54	52	48
16	53.8	65	44	58	52	50	44
17	55.4	68	44	59	54	52	46
18	66.2	75	50	71	66	61	53
19	63.9	75	52	67	64	62	57
20	61.2	78	44	66	60	56	49

3.2.2 NOISE GENERATORS FROM OUTSIDE THE COMMUNITY

In the previous section noise impacts created in the community were discussed. These impacts can primarily be controlled, or at least mitigated to levels so that the impacts are limited. Section 3.4 describes the various methods that can be incorporated into community design to help mitigate noise impacts. In addition to those noise sources that come from the community, there are those outside of Norco that can also create noise impacts, but are outside of control by the City of Norco. The two primary outside noise sources that impact the community are the I-15 Freeway which bisects the City and which has numerous small plot agriculture/animal-keeping/equestrian land uses adjacent to it; and overflight traffic noise from flights taking off from Ontario International Airport.

3.2.2a Freeway Traffic Noise. The primary existing noise source that affects the greatest number of residents in the City of Norco is the I-15 Freeway. Having been constructed after the community was well established, there are a number of small plot agriculture/animal-keeping/equestrian lots immediately adjacent to the freeway. The number of vehicles using the stretch of the freeway through



Norco has been growing steadily. In 1991 there was an average daily traffic volume of 82,000 that rose to 99,000 in 1996. The latest CALTRANS annual report (2001) has the average daily traffic flow at 138,000 in the section between the Hidden Valley Parkway and Sixth Street interchanges. A typical noise contour map for a six-lane freeway with 139,000 average daily trips in Riverside County shows that at 50 feet from the centerline of the outermost lane, the noise level is 80 dB(A) LDN. Exhibit 3.4 shows the typical noise contours for a freeway of this size which is very similar to the I-15 Freeway in Norco.

EXHIBIT 3.4 TYPICAL FREEWAY NOISE CONTOURS

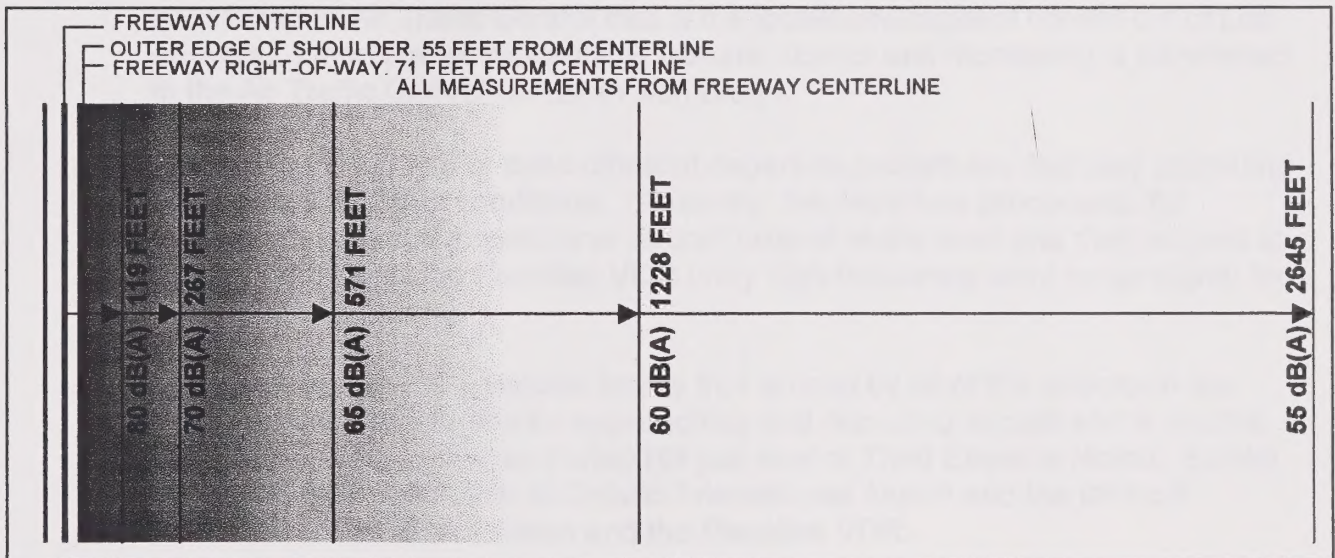


Exhibit 3.4 represents typical sound impacts from freeways assuming everything is under average circumstances where there are no significant barriers to the transmission of sound waves including topography or sound walls. In the City of Norco, there are slopes on each side of the freeway that are approximately 15 feet high beginning north of the Third Street undercrossing. South of this point the adjacent neighborhoods are downslope from the freeway on both sides. This continues until Second Street where slopes begin again on both sides, though not as high as the slopes north of Third Street.

The slopes are one of the methods used to mitigate the impact of freeway noise. There are also some pepper trees and sparse shrubbery along portions of these slopes that helps attenuate noise levels. On the west side of the freeway, as has been indicated earlier, the property adjacent is zoned commercial and the impact from freeway noise is not considered disruptive to that land use. On the east side, however, the land use is small plot agriculture/animal-keeping/equestrian and the freeway noise has a greater impact. The greatest concern is that portion of the freeway on the east side between Second and Third Streets where the



adjoining properties are below freeway grade, and there is no sound wall to mitigate the impact.

3.2.2b. Airport Related Traffic Noise. Airplanes flying in and out of airports have two operating procedures by which they fly by. Visual flight rules (VFR) are used when weather conditions are good so that pilots can see the runway and other aircraft in the vicinity for three statute miles. Under instrument flight rules (IFR) pilots must rely on cockpit instruments guided by ground or satellite based navigational equipment, and on air traffic control services where they are available. Large jets most always fly under IFR. Within 1,000 vertical feet of an airport that has a tower, the flight patterns of planes are controlled by the tower. Once a plane goes above 1,000 feet, monitoring of the flight pattern is transferred to Air Traffic Control that is the local/semi-regional control out of Los Angeles. When planes reach flying altitude, control and monitoring is transferred to the Air Traffic Control Center in San Diego.

Airports can have two or three different departure procedures that vary according to weather and traffic conditions. Generally, the departure procedures for Ontario International Airport have aircraft take off to the west and then ascend to the southeast over the Paradise VOR (very high frequency omni-range signal for electronic navigation.).

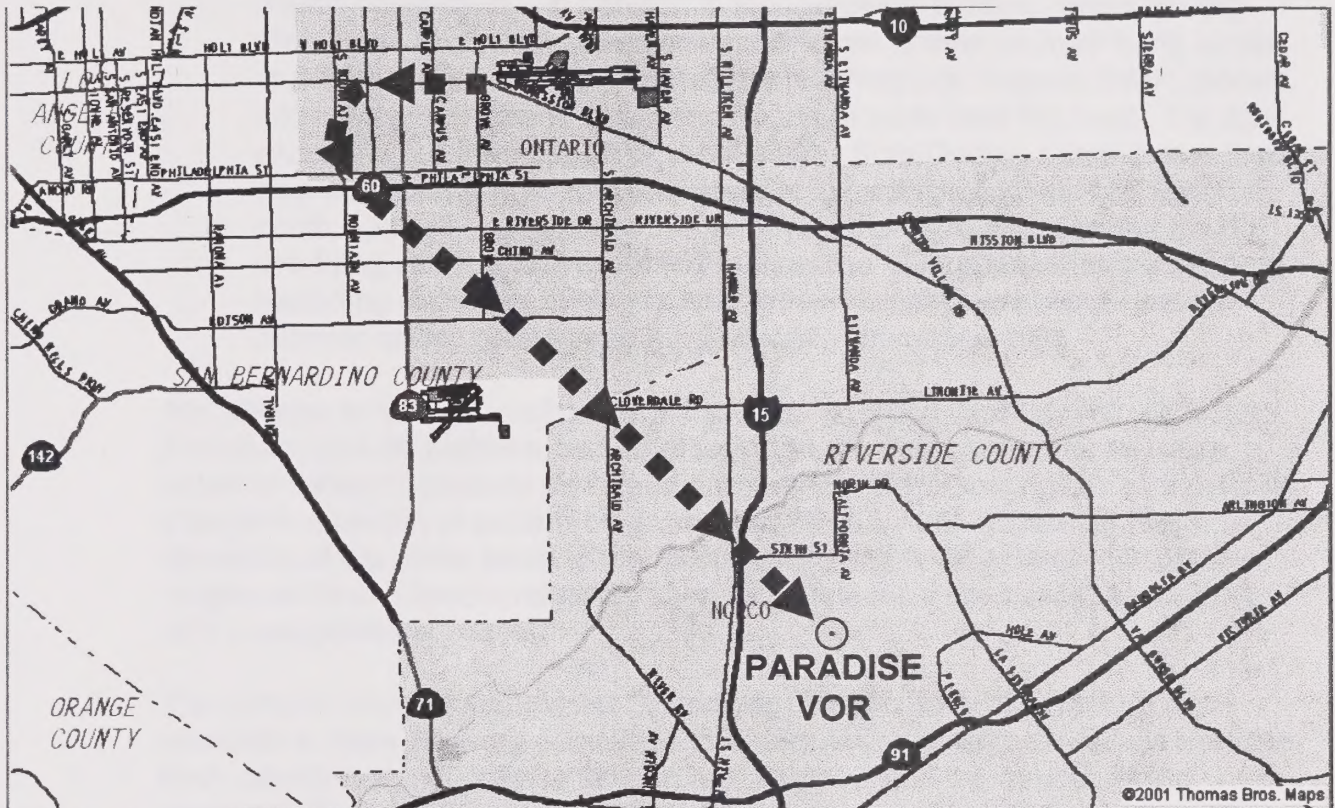
The Paradise VOR is a beacon facility that is used by all of the airports in the Southern California region for approaching and departing aircraft and is located on what is known locally as Vortac Hill just east of Third Street in Norco. Exhibit 3.5 shows the relationship of Ontario International Airport and the take-off patterns with the City of Norco and the Paradise VOR.

There are numerous factors that go into the determination of flight take-off patterns, the most important being the location of the Paradise VOR. All of the flights that take off from Ontario International Airport after 7 a.m. follow the take-off pattern shown in Exhibit 3.5. As indicated, this can change depending on weather conditions and area traffic and there are situations where the flights take off to the east, but this is not the norm. Cargo planes, because they are taking off during off-peak hours as compared to passenger planes, do not follow the standard take-off pattern, but take off to the east and then immediately turn south to the Paradise VOR. Listed below are some reasons and factors that make changing the take-off patterns very difficult.

Paradise VOR – the location of the VOR cannot be changed since so many flights in the Southern California region, including flights on approach and take-off from Los Angeles International, John Wayne, Burbank, and Long Beach Airports, and smaller fields, in addition to Ontario International Airport, use it for visual guidance. The United States Federal Aviation Administration has proposed the elimination of all VORs with the advent and improvement of Global Positioning System



EXHIBIT 3.5 ONTARIO INTERNATIONAL AIRPORT TAKE-OFF PATTERNS



technologies, but this is being opposed by small aircraft organizations that rely more heavily on the VORs. Any final determination is not likely in the near future.

Physical barriers – there are physical barriers east of the Ontario International Airport that make direct take-off routes in that direction more dangerous because of having to elevate rapidly to clear the topography. The Jurupa Mountains, though not extremely high, create the first obstruction that needs to be cleared. After that, planes still have to climb sharply to clear the height of the San Bernardino and San Jacinto Mountains further east. This can be problematic with heavy loaded cargo planes that cannot climb as quickly.

Although it is not the norm, when planes do take off directly east, they immediately loop back over the Paradise VOR to gain elevation without flying directly into the path of approaching aircraft from the east. The loop down to the Paradise VOR allows pilots more room to reach their desired



flying levels so as to clear surrounding topography while maintaining 3,000- foot clearances from all other aircraft in the vicinity.

Traffic congestion – in addition to topographical barriers, pilots leaving Ontario International Airport also have to get to their desired flying levels in the face of all incoming aircraft approaching Los Angeles International, John Wayne, Burbank, and Long Beach Airports from the east. The loop around to the Paradise VOR takes planes from Ontario out of those direct approach patterns so that they can get to their flying levels and continue north, east, or southeast above the levels that local approaching aircraft are flying at. The turn down to the Paradise VOR eliminates the need for departing aircraft of having to loop within the congested east-west air corridor before gaining enough altitude to leave the basin.

Any change or disruption of patterns has to be weighed together with all factors that affect take-off patterns, and whether proposed changes would increase potential safety hazards to pilots and passengers. What may seem as a simple change in direction or pattern on ground can have a large impact on the dynamics of the entire basin where pilots are having to clear large mountain ranges north and east in relatively short flying spaces while having to contend with a congested airspace.

The Ontario International Airport Operations Office is currently working to establish a noise advisory committee that will consist of representatives from the FAA, county and city governments in the region around the airport, airline representatives, citizens, and from the airport operations itself to address noise impacts and how best to mitigate them. It is not known when the committee formation will be completed since it involves federal agencies. The Chief of Operations indicated that they have been working with UPS on ways to avoid or mitigate fly-over impacts around the Paradise VOR, and that UPS is doing everything they can to increase elevation before they get to the VOR. The problem is that often times the planes are heavy with cargo loads and they are not able to climb as quickly. The UPS representatives did state, however, and the Chief of Operations confirmed, that none of the flights leave with cargo loads that are too heavy for the plane. It is ultimately the pilot that has last say on whether a plane will fly or not and if a plane is overloaded, they will not fly. It is also the pilot who has last say on the path of departure from the airport even though it may differ from what was recommended by the tower.

Los Angeles World Airports which operates Ontario International Airport maintains and monitors 15 noise measuring stations around the airport to determine where the 65 dB(A) CNEL contour line is located. Locations of the stations are moved depending on where that contour line moves with each year. If conditions at the airport change, such as flight patterns, or the number of planes, or the times of the day when flights occur, that cause the 65 dB(A) contour line to move, the stations are relocated to the point where there are no



areas beyond the monitoring stations that experience 65dB(A) CNEL. Currently that contour line lies within an area roughly bounded by the San Bernardino Freeway (10) on the north, the Pomona Freeway (60) on the south, the Ontario Freeway (15) on the east and Euclid Avenue on the west.

These noise monitoring stations measure levels on the CNEL scale which means that it is a weighted 24-hour average level. They do not measure single event noise occurrences which may exceed 65 dB(A) outside of the established contour line. It is the single events that seem to be of most interest to the City of Norco since the impacts are not continual. And it is the time of day when they occur that is also the issue. The cargo flights generally leave the airport during off-peak hours when ambient noise levels are low, so the noise impact of the plane seems louder than it would during the daytime.

3.2.2c. Other Noise Generators Outside the Community. The Draft Riverside County Integrated Program has identified Raahauge's Shotgun Range located off the end of Bluff Street as a potential noise generator but does not contain a noise contour map of the location. The site is not identified in this document since there is no known history of noise complaints to the City from that facility. The site is located within the river plain of the Santa Ana River below the bluffs where the nearest homes are located. There is also significant and dense natural vegetation around the facility so it is likely that much of the noise is attenuated through natural barriers, landscaping, and distance.

3.2.3 SENSITIVE RECEPTORS IN THE COMMUNITY

The State has deemed certain land uses to be noise sensitive requiring identification and consideration when determining possible noise impacts in the community. These include, but are not limited to hospitals, convalescent homes, schools, churches, and sensitive wildlife habitat. Exhibit 3.6 shows all of the sensitive receptors recommended by the State. The City does not have hospitals or convalescent homes, but the senior housing complexes have been included.

Some communities include single-family residential areas as sensitive noise receptors deserving of special consideration. In Norco the small plot agriculture/animal keeping/equestrian lifestyle is considered a sensitive receptor. This consideration is based more on the lifestyle environment than it is on the impact to animals as explained in Section 2.1, and agriculture alone is generally not considered to be sensitive to noise impacts.

3.3 LAND USE AND NOISE COMPATIBILITY STANDARDS

3.3.1 FEDERAL STANDARDS

The Environmental Protection Agency has established guidelines for other agencies when noise regulations are necessary, but they are not mandatory





LEGEND

-  SCHOOLS
-  PARKS/
RECREATION AREAS
-  SENIOR HOUSING
-  CHURCHES
-  OPEN SPACES

EXHIBIT 3.6
SENSITIVE RECEPTORS

requirements and are provided for informational purposes only. These are based on the relationship between noise levels and human responses. Basically, higher than 45 dB(A) (Ldn or Leq) there is interior interference and annoyance. There is exterior interference when noise levels exceed 55 dB(A) and hearing loss can occur at 70 dB(A) and greater. The Federal Highway Administration (FHA) has developed noise standards that are applied when highway projects are proposed, or where housing is proposed and FHA or Caltrans are responding agencies for environmental input and recommendation.

The FHA standards are not directly applicable for development in Norco since most of the residential zones adjacent to the freeway are already developed. They do, however, indicate the standards that one agency of the federal government has determined are acceptable for residential development, and the circumstances when noise impacts should be a consideration.

The FHA design goal for highway development in residential areas is an Leq level of 67 dB(A) for exterior yard areas, and 52 dB(A) for interior levels. This is based on a general assumption that standard wood frame housing provides an automatic 10 dB(A) reduction from exterior to interior noise levels with the windows open, and a 20 dB(A) reduction with the windows closed almost all of the time (basically non-opening windows). The FHA has come up with general categories of land uses that are appropriate under various noise settings as shown in Table 3.6.

TABLE 3.6
FHA NOISE DESIGN LEVELS dB(A)

NOISE LEVEL	57 Leq 60 (L10)	67 Leq 70 (L10)	72 Leq 75 (L10)	-- --	52 Leq 55 (L10)
ACTIVITY CATEGORY	A (exterior)	B (exterior)	C (exterior)	D	E (interior)
	Where quiet serves an important public need to preserve a specific intended land use.	Public areas where the need to maintain quiet is not as critical as for those in Category A.	Developed lands, properties, and activities not already included in Categories A & B.	Undeveloped lands.	
	ACTIVITIES				
	Amphitheaters, Specific parks (or), Portions of parks, Open spaces, Historic districts.	Recreation areas, Playgrounds, Public parks, Private parks, Residences, Motels & hotels, Meeting rooms, Schools, Churches, Libraries, Hospitals.	No specific activities listed.	Noise abatement is not required unless development is imminent and the cost or difficulty of incorporating abatement measures later would be prohibitive.	Interiors of: Residences, Motels & hotels, Schools, Churches, Meeting rooms, Libraries, Hospitals, Auditoriums.

When determining appropriate design levels either the Leq or the L10 scales are used, but not both. L10 means that not more than 10 % of occurrences will exceed the stated noise level.



When the United States Department of Housing and Urban Development (HUD) is considering funding for a project where noise could be an issue, the Department makes a determination on whether the project is “normally acceptable,” “normally unacceptable,” or “unacceptable” based on criteria as shown in Table 3.7.

**TABLE 3.7
HUD HOUSING CRITERIA
FOR EXTERIOR NOISE ACCEPTABILITY (Ldn)**

DEGREE OF ACCEPTABILITY	EXTERIOR NOISE EXPOSURE (dB)						
	55	60	65	70	75	80	85
Acceptable							
Normally Unacceptable							
Unacceptable							
Standard construction will make indoor noise levels acceptable, and exterior levels will be reasonable for recreation and play; standard HUD approval.							
Special building construction may be necessary to protect indoor environment, and barriers may be necessary to make outdoor environment acceptable; HUD projects need Regional Admin. approval.							
The construction cost to make the indoor environment livable may be prohibitive, and the outdoor environment would remain unacceptable; HUD projects prohibited.							

3.3.2 STATE STANDARDS

The California Administrative Code establishes the noise insulation standards that must be applied to all new multi-family structures including apartments, condominiums, attached dwellings, motels and hotels. The federal standards were designed to mitigate the noise impacts of federally funded projects that are typically noise producers. The state guidelines are designed to protect new multi-unit residential structures that are located within areas of 60 dB(A) CNEL and greater adjacent to roads, railroads, transit lines, airports and industrial areas. The buildings in these areas require acoustical studies to determine the appropriate attenuation measures to achieve interior noise levels of not greater than 45 dB(A) CNEL with doors and windows closed.

The impacts of airport noise are regulated through the California State Aeronautics Act. Eventually all airports in the state must operate so as not to create external noise levels greater than 65 dB(A) CNEL in existing or future residential areas. The 65 dB(A) CNEL level was chosen because, up to that



point, the average person living in a home of standard California-type construction, will not experience any loss of sleep or disruption of speech. Currently the area encompassed by noise impacts of 65 dB(A) CNEL and greater lies within a radius that extends roughly one to two miles around the perimeter of the airport. As has been explained, the City of Norco is well out of the 65 dB(A) CNEL contour and is therefore not included in airport programs to mitigate noise impacts. No other airport in the area creates noise impacts that noticeably affect the City of Norco.

Each municipality or jurisdiction is charged by the state with the responsibility of establishing and implementing its own noise element and noise ordinance. The state has established general guidelines based on known nuisance and safety factors associated with noise pollution (Table 3.8, Land Use Compatibility). In addition the state has provided jurisdictions with guidelines on how to further refine or correct these generalized standards to reflect the noise issues that are unique and/or significant for each particular community.

The corrections are done by adjusting the actual CNEL level to better reflect the existing condition or how it may be impacted by changing conditions (Table 3.9, Normalized CNEL Corrections). For example, areas with large temperature variations between winter and summer can have average CNEL levels adjusted downward in winter to reflect that windows are closed all the time as compared to summer. Areas that are removed from urban noise and truck traffic can have the levels adjusted upward to reflect the relative isolation that is the norm.

3.3.3 LOCAL STANDARDS

As indicated, the state delegates to local jurisdictions the responsibility of establishing General Plan Noise Elements and of enacting noise ordinances and other policies for enforcement. At the writing of this document, Norco did not have a noise ordinance. All noise complaints were handled on a case-by-case basis as nuisances or as potential threats to the public health and safety. Riverside County has noise threshold levels that are very similar to the state standards shown in Table 3.8 with some variations for local conditions considered important by the County. Open space areas that have been set aside to preserve an ambient serenity and/or for the preservation of habitat and species are included by the County as sensitive receptors.

Most communities have standards drawn from the State recommendations shown in Table 3.8 and many suburban communities have established 65 dB(A) as the maximum exterior noise level for residential areas. The City of Norco should implement noise policies that are compatible with the small plot agriculture/animal keeping/equestrian lifestyle. While there is no clear evidence that increased noise levels within reason will have an affect on domestic animals, the ambient lifestyle should be considered when the City enacts a noise ordinance.



TABLE 3.8
LAND USE COMPATIBILITY
CALIFORNIA STATE GUIDELINES

LAND USE CATEGORIES	COMMUNITY NOISE EXPOSURE dB(A) CNEL					
	55	60	65	70	75	80
RESIDENTIAL – LOW DENSITY, SINGLE FAMILY, DUPLEX, MOBILE HOMES						
RESIDENTIAL – MULTIPLE FAMILY						
TRANSIENT LODGING – MOTELS, HOTELS						
SCHOOLS, LIBRARIES, CHURCHES, HOSPITALS, NURSING HOMES						
AUDITORIUMS, CONCERT HALLS, AMPHITHEATERS						
SPORTS ARENAS, OUTDOOR SPECTATOR SPORTS						
PLAYGROUNDS, NEIGHBORHOOD PARKS						
GOLF COURSES, RIDING STABLES, WATER RECREATION, CEMETARIES						
OFFICE BUILDINGS, BUSINESS, COMMERCIAL, PROFESSIONAL OFFICES						
INDUSTRIAL, MANUFACTURING, UTILITIES, AGRICULTURE						
 NORMALLY ACCEPTABLE Specified land use is satisfactory, based upon assumption that buildings are of normal conventional construction, without special noise insulation.	 CONDITIONALLY ACCEPTABLE New construction should only proceed after a detailed analysis of noise reduction requirements is made and needed insulation included in the design. Conventional construction may suffice with closed windows and a fresh air supply system.	 NORMALLY UNACCEPTABLE New construction should be discouraged. If construction proceeds, a detailed analysis of noise reduction requirements must be completed with needed insulation included in the design.	 CLEARLY UNACCEPTABLE New development should not occur. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be useable.			



TABLE 3.9
NORMALIZED CNEL CORRECTIONS (dBA)
CALIFORNIA STATE GUIDELINES

TYPE OF CORRECTION	DESCRIPTION OF CHANGE	MEASURED CHANGE dB(A) CNEL
SEASONAL CORRECTION	Summer (or year-round operation)	0
	Winter only (or windows always closed)	-5
CORRECTION FOR OUTDOOR RESIDUAL NOISE LEVEL	Quiet suburban or rural community (remote from large cities and from industrial activity and trucking).	+10
	Quiet suburban or rural community (not located near industrial activity).	+5
	Urban residential community (not immediately adjacent to heavily travelled roads and industrial areas).	0
	Noisy urban residential community (near relatively busy roads or industrial areas).	-5
	Very noisy urban residential community.	-10
	No prior experience with the intruding noise.	+5
CORRECTION FOR PREVIOUS EXPOSURE AND COMMUNITY ATTITUDES	Community has had some previous exposure to noise. This correction may also be applied in a situation, where the community has not been exposed, that bona fide efforts are being made to control the noise.	0
	Community has had considerable previous exposure to the intruding noise and the noise maker's relations with the community are good.	-5
	Community aware that operation causing noise is very necessary and it will not continue indefinitely. This correction can be applied for an operation of limited duration and under emergency circumstances.	-10
PURE TONE OR IMPULSE	No pure tone or impulsive in character.	0
	Pure tone or impulsive character present.	-5
Source: State Guidelines for the Preparation of Noise Elements of the General Plan.		
Corrections made by adding the "Measured Change" to existing CNEL to obtain the normalized CNEL.		

3.4 NOISE ATTENUATION

3.4.1 NATURAL ATTENUATION

Noise naturally dissipates over distance depending on the terrain, vegetation, and the amount of barriers such as buildings and walls to block noise waves. Soil types, temperature gradients, wind direction and speed are also factors that help attenuate noise over distance. In an area that is primarily flat with no barriers and with relatively low background noise levels, a single point source



noise level will dissipate approximately 6.0 dB for each doubling of distance from the point source.

For a line source of noise, such as a heavily traveled road, the noise level drops about 3.0 dB when the distance is doubled between source and receptor. This reduction increases to 4.5 dB when all environmental factors such as soil, vegetation, and wind are considered. In their "Noise Assessment Guidelines" HUD uses a 4.5 dB drop with a doubling of distance when assessing impacts from roadways. Distance is the easiest and most cost-effective measure to mitigate the incompatibility of significant noise generators and sensitive receptors. In an urban setting, while this can be applied to certain specific land uses in limited situations, distance is generally not a feasible mitigation overall.

3.4.2 BUILDING AND SITE PLANNING ATTENUATION TECHNIQUES

There are two basic methods for mitigating the impact of noise. The first is to control and minimize it as much as possible at its point source through the application of building techniques, and site and landscaping design features. When the application of attenuating factors at the site have only a minimal impact at reducing noise levels, or are prohibited by federal or state mandate for certain uses, acoustical site planning, architectural design and construction need to be provided off-site so that future uses are not immediately incompatible with existing conditions. Where development already exists, the construction of noise barriers in the form of berms and walls can be applied.

3.4.2a. Acoustical Land Planning. Existing and anticipated noise environments must be considered when configuring land uses in the Land Use Element of the General Plan so that incompatible uses are kept separated. The Land Use Plan has been designed, and should be maintained, so as to separate and protect potentially incompatible land uses as follows:

- Placement of noise compatible land uses between significant noise generators and noise sensitive land uses
- Zoning restrictions on the location and operation of potential noise generators
- Compliance with any applicable airport land use compatibility plans (none apply in Norco)
- Restrictions on the operation hours of significant noise generators

3.4.2b. Acoustical Site Planning. Whether a project involves the construction of a new potential significant noise generator, or the construction of a noise sensitive land use in an area impacted by noise, there are site planning measures that can help reduce the impacts of excessive noise levels.

- Use of buildings, landscaping, and berms as noise barriers



- Orientation of buildings and common open areas away from noise sources
- Use of parking, landscaping, and increased setbacks as measures to increase distance between noise generators and noise sensitive land uses

3.4.2c. Acoustical Architectural Design. The design and layout of individual buildings can incorporate measures to achieve greater noise attenuation.

- Building height can be used to help provide attenuation to the site and to the interior of the building.
- Rooms with more sensitive uses such as meeting halls in commercial buildings and bedrooms in residential buildings can be located within the building so that the rest of the building helps provide attenuation from nearby significant noise generators.
- The placement of doors, windows, balconies, outdoor stairways, etc. can be done in a manner such that they are not exposed to significant noise generators.
- Architectural design features such as awnings, wing walls, wall surface articulation, and window size can be incorporated to help shield common areas and building openings from significant noise generators.

3.4.2d. Acoustical Construction Techniques. The following techniques are applied to various parts and phases of building construction to help reduce interior noise levels.

- Dense building materials for walls, floors, ceilings, and doors
- Acoustical treatments to windows consisting of any combination of double glazing, double panes, air tight seals, and non-opening windows
- Maximum air space in attics and walls
- Design of ventilation systems that open away from noise exposed wall and ceiling surfaces

3.4.3 TRAFFIC SPEED CONTROL

As stated in Section 3.4.1, there is a decrease of 4.5 dB(A) as you double the distance away from a line source of noise like a street. Traffic noise is the result of a number of factors, the biggest of which are the number of vehicles and the speed at which the vehicles are traveling. Techniques to reduce traffic speed have to be weighed with sometimes opposing public health and safety needs with regards to the movement of traffic and effective access by emergency vehicles.



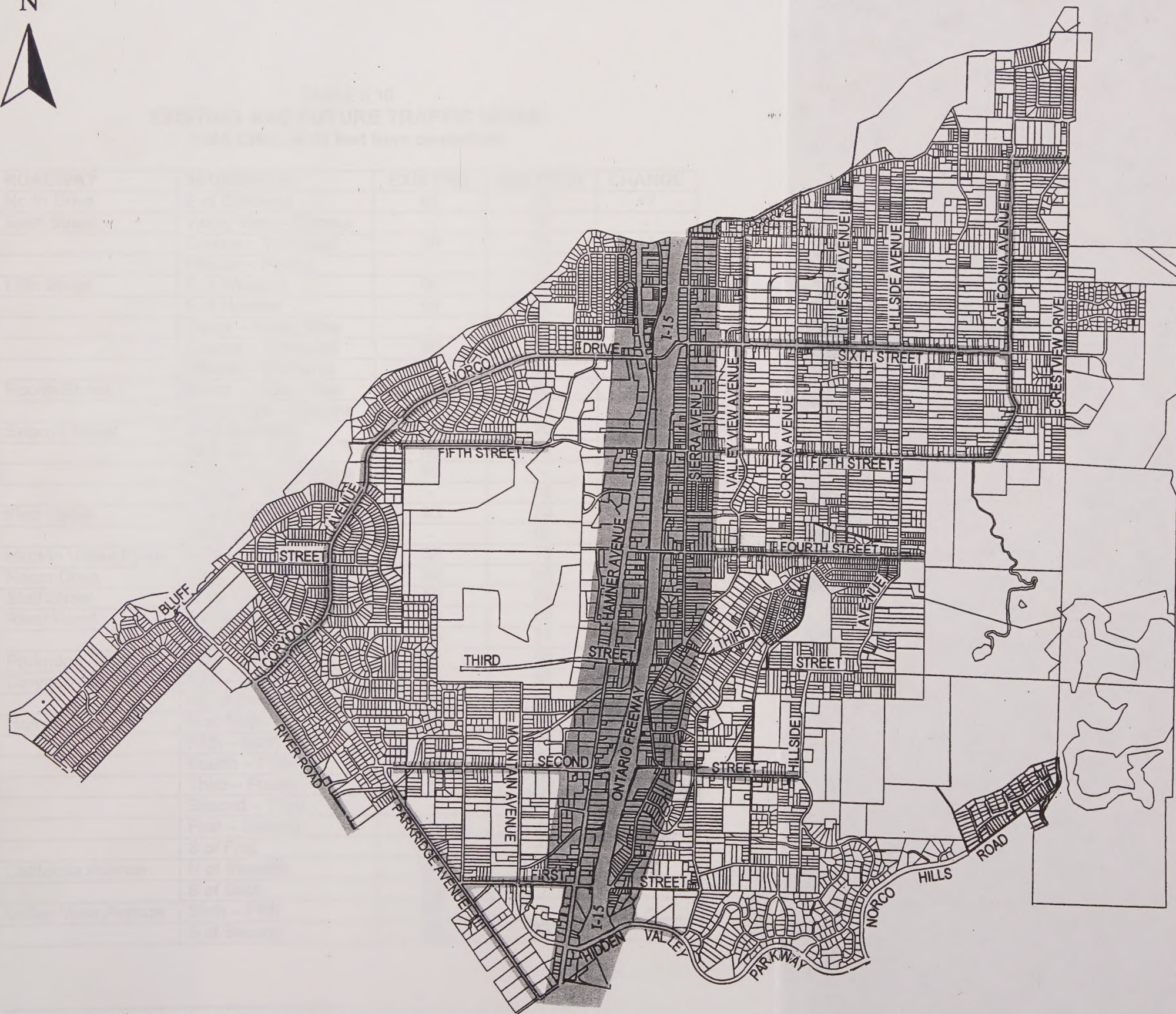
3.5 PROJECTED NOISE LEVELS

Noise-sensitive land uses are considered impacted if the exterior noise level exceeds 65 dB(A) CNEL. Exhibit 3.7 shows the areas of the City that are considered impacted under current noise levels, and Exhibit 3.8 shows what the anticipated impact area will be under buildout conditions in 2020. The graphics showing impact areas represent worst case scenarios where there is direct line of sight from the noise source to the receptor. Because of this, the impact areas are overstated since there are barriers along portions of the freeway consisting of grade differentials, berms, and sound walls that attenuate some of the noise impacts.

All of the impacted areas in the City are associated with traffic, the primary impact area being the corridor that parallels the I-15 Freeway. Table 3.10 shows that with the exception of the freeway, all roads currently create CNEL levels of 65 dB(A) or greater fairly close to the road right-of-way within most standard building setback areas.

It is projected that most City roadways will experience noise levels exceeding 65 dB(A) CNEL at 50 feet from centerline, and that in some locations the 65 impact area may extend into what is considered sensitive land use areas such as the immediate front yards for some residences. All of the increases of 5 dB(A) or greater shown in Table 3.10 will occur along residential streets east of Hamner Avenue. In the impact area expected from the traffic along the I-15 Freeway, all outdoor areas will exceed 65 dB(A) regardless of the barrier effects that residences normally provide.





LEGEND



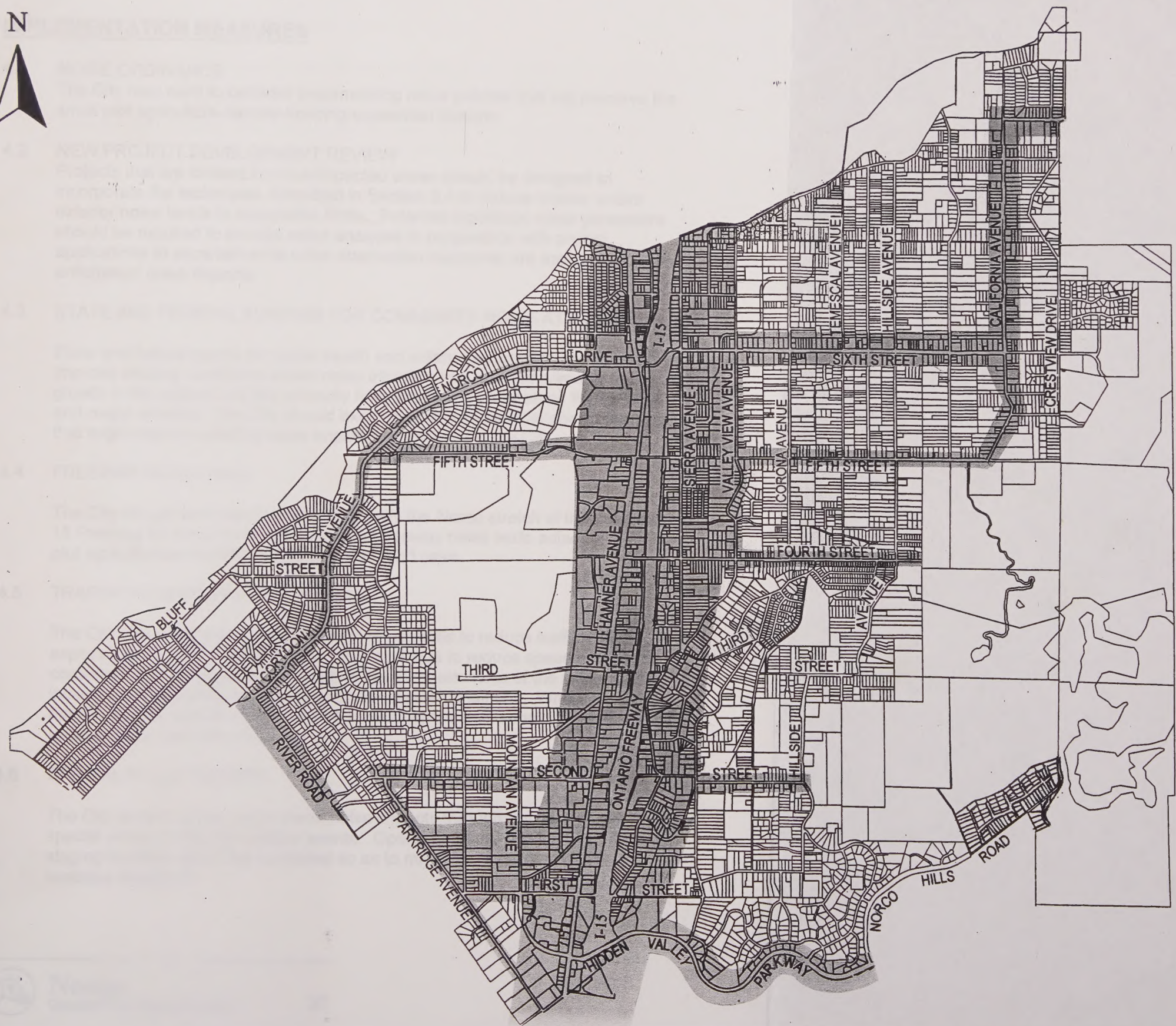
TRAFFIC NOISE
IMPACTED AREAS
EXISTING CONDITIONS
(CNEL $\geq$ 65 dB(A))

EXHIBIT 3.7
NOISE IMPACTED AREAS
(Existing Conditions)

TABLE 3.10
EXISTING AND FUTURE TRAFFIC NOISE
(dBA CNEL at 50 feet from centerline)

ROADWAY	SEGMENT(S)	EXISTING	BUILDOUT	CHANGE
North Drive	E of California	65	72	+7
Sixth Street	Valley View – Corona	-	75	-
	Corona – Temescal	70	75	+5
	Hillside – Pedley	-	75	-
Fifth Street	E of Western	66	63	-3
	E of Hamner	65	69	+4
	Sierra – Valley View	-	67	-
	Corona – Temescal	60	64	+4
	Hillside – California	-	63	-
Fourth Street	Sierra – Valley View	-	66	-
	Valley View – Corona	58	63	+5
Second Street	W of Mountain	68	70	+2
	Hamner – I-15	69	73	+4
	Valley View – Corona	66	-	-
	Corona – Temescal	-	68	-
First Street	E of Parkridge	63	70	+7
	Corona – Temescal	-	68	-
Hidden Valley Pkwy.	Valley View – Corona	68	73	+5
Norco Drive	Fifth – Hamner	62	65	+3
Bluff Street	River – Vine	59	62	+3
River Road	NW of Bluff	66	68	+2
	Corydon – First	68	71	+3
Parkridge Street	First – Second	62	65	+3
Corydon Avenue	Fifth – Vine	65	67	+2
	NE of River Road	64	64	0
Hamner Avenue	N of Sixth	66	68	+2
	Fifth – Sixth	69	74	+5
	Fourth – Fifth	70	75	+5
	Third – Fourth	-	75	-
	Second – Third	-	75	-
	First – Second	-	74	-
	S of First	72	70	-2
California Avenue	N of Seventh	67	73	+6
	S of Sixth	59	-	-
Valley View Avenue	Sixth – Fifth	60	-	-
	S of Second	56	63*	+7





LEGEND



TRAFFIC NOISE
IMPACTED AREAS
2020 PROJECTIONS
(CNEL $\geq$ 65 dB(A))

EXHIBIT 3.8
NOISE IMPACTED AREAS
(Projected 2020 Conditions)

IMPLEMENTATION MEASURES

4.1 NOISE ORDINANCE

The City may want to consider implementing noise policies that will preserve the small plot agriculture-/animal-keeping/equestrian lifestyle.

4.2 NEW PROJECT DEVELOPMENT REVIEW

Projects that are located in noise-impacted areas should be designed to incorporate the techniques described in Section 3.4 to reduce interior and/or exterior noise levels to acceptable limits. Potential significant noise generators should be required to provide noise analyses in conjunction with project applications to ascertain what noise attenuation measures are appropriate for the anticipated noise impacts.

4.3 STATE AND FEDERAL FUNDING FOR COMMUNITY NOISE ATTENUATION

State and federal grants for public health and safety may provide opportunities to improve existing conditions where noise intrusion has resulted primarily from growth in the region; and this primarily from increased traffic along the freeway and major arterials. The City should explore all opportunities to apply for grants that might improve existing noise-impacted conditions in the City.

4.4 FREEWAY NOISE WALL

The City should work with Caltrans to identify the Norco stretch of the Interstate 15 Freeway for future funding to construct freeway noise walls adjacent to small plot agriculture/animal-keeping/equestrian land uses.

4.5 TRAFFIC/ACCESS/SPEED CONTROLS

The City should be open and seek feasible methods to reduce traffic speed especially in quieter neighborhoods. Any methods to reduce speed need to be consistent with the goals and policies of the other elements of the General Plan including Public Safety, so as not to create unsafe conditions. Where feasible, the City should seek to control vehicle access where traffic could present an unacceptable noise intrusion.

4.6 SPECIAL EVENT PERMITS

The City should control single event noise impacts through the issuance of special event permits for outdoor events. Operation hours and location of event staging facilities should be controlled so as to minimize impacts to nearby sensitive receptors.



4.7 ONTARIO AIRPORT NOISE ADVISORY COMMITTEE

The City should take an active participatory role once an airport noise advisory committee is formed. The City should also monitor regional airport meetings to insure that City interests are protected with any changes to take-off and landing patterns and policies. The City should also work with the airport to minimize and eliminate as many early morning or late night take-offs by cargo planes that ascend directly to the Paradise VOR in Norco.



U.C. BERKELEY LIBRARIES



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